Extreme Heat

Indiana Department of Homeland Security

Interagency Press Release Bank

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What to Know About Extreme Heat

Extreme heat occurs during the summer months and is easy to predict. Listen to the local station and they will inform you when a heat wave is in the area. Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can provoke dust storms and low visibility.

In a normal year, approximately 175 Americans die from overexposure to extreme heat. Extreme heat kills by pushing the human body beyond its limits. Under normal conditions, the body's internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and high humidity evaporation is slowed and the body must work extra hard to maintain a normal temperature.

Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. The following conditions can make you more susceptible to extreme heat related illnesses and complications.

- Men sweat more than women, so are more susceptible to heat illness because they become more quickly dehydrated.
- Those who are sick or overweight are also at increased risk.
- Sunburn can significantly slow the skin's ability to release excess heat.
- Young children are at great risk. NEVER leave a child, of any age, inside a vehicle. Even if you are just leaving the vehicle for a minute and have all the windows rolled down it is extremely dangerous to leave anyone inside a vehicle during summer temperatures.
- Elderly people do not adjust as well as young people to sudden changes in temperature. They are more likely to have chronic medical conditions that can upset normal body responses to heat. They are also more likely to take prescription medicines that impair the body's ability to regulate its temperature or that inhibit perspiration.

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- People living in urban areas may be at greater risk from effects of a prolonged heat wave than those living in rural areas. Asphalt and concrete store heat longer and gradually release heat at night, which can produce higher nighttime temperatures known as the “urban heat island effect.” Also, stagnant atmospheric conditions trap pollutants in urban areas, thus adding contaminated air to excessively hot temperatures.
- The risk for heat-related illness and death may increase among people using the following drugs: (1) psycho tropics, which affect psychic function, behavior or experience (e.g. haloperidol or chlorpromazine); (2) medications for Parkinson’s disease, because they can inhibit perspiration; (3) tranquilizers such as phenothiazines, butyrophenones and thiozanthenes; and (4) diuretic medications or "water pills" that affect fluid balance in the body.

Terms to know:

- Heat wave: Prolonged period of excess heat often combined with excessive humidity.
- Heat Index: A number in degrees Fahrenheit (F) that tells how hot it feels when relative humidity is added to the air temperature.
- Heat rash: A skin irritation caused by excessive sweating during hot, humid weather. It can occur at any age but is most common in young children. Heat rash looks like a red cluster of pimples or small blisters. It is more likely to occur on the neck and upper chest, in the groin, under the breasts and in elbow creases.
- Heat cramps: Muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe heat-related illness, they are often the first signal that the body is having trouble with the heat. Symptoms include:
    - Body temperature beginning to rise up to 102^{o} F
    - Flushed looking appearance
    - Muscle cramps
- Heat exhaustion: Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to vital organs. This results in a form of mild shock. If not treated, the victim’s condition will worsen; body temperature will continue rising and the victim may suffer heat stroke.

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Symptoms may include:

- Body temperature over 102^{o} F
- Cool, moist, pale or flushed skin
- Heavy sweating
- Muscle cramps
- Nausea
- Vomiting
- Weakness
- Fatigue
- Feeling faint
- Diarrhea
- Skin feels cool and clammy

Heat stroke / sun stroke: A life-threatening condition. The victim's temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly. Symptoms may include:

- Body temperature over 104^{o} F
- Hot, red, dry skin
- Nausea
- Vomiting
- Headache
- Weakness
- Fatigue
- Confusion
- Rapid, weak pulse
- Shallow breathing
- Coma, seizures and death

What to do during Extreme Heat

Extreme heat kills by pushing the human body beyond its limits. Under normal conditions, the body's internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain a normal temperature. Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Know if you are at a particularly high risk for a heat emergency and take appropriate protective measures.

Stay in touch:

- NEVER leave animals, children or the elderly inside a vehicle! Even if you are just leaving the vehicle for a minute and have all the windows rolled down, it is extremely dangerous to leave anyone inside a vehicle during summer temperatures.

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- Use the buddy system when working in extreme heat, and take frequent breaks.
- Check on family, friends and neighbors who do not have air conditioning and who spend much of their time alone.

Keep yourself hydrated and nourished:

- Drink more fluids, regardless of your activity level. Do not wait until you are thirsty to drink. If your doctor generally limits the amount of fluid you drink or has you on water pills, ask him how much you should drink while the weather is hot.
- Do not drink liquids that contain alcohol or large amounts of sugar or caffeine. They can make you feel good briefly, but make the heat's effects on your body worse. This is especially true about beer, which dehydrates the body. Also avoid very cold drinks to pre-empt stomach cramps.
- Eat small meals and eat more frequently. Avoid foods that are high in protein which increase metabolic heat. Although heat lessens your appetite, your body needs proper nutrition to function.
- Avoid using salt tablets unless directed to do so by a physician.

Take it easy:

- Slow down. Avoid strenuous activity. If you must do strenuous activity, do it during the coolest part of the day, which is usually in the morning between 4 and 7 a.m.
- Cut down on exercise. If you must exercise, drink two to four glasses of cool, nonalcoholic fluids each hour. A sports beverage can replace the salt and minerals you lose in sweat. If you are on a low-salt diet, talk with your doctor before drinking a sports beverage.
- Stay indoors and, if at all possible, stay in an air-conditioned place. If your home does not have air conditioning, go to the movie theatre, shopping mall or public library. Even a few hours spent in air conditioning can help your body stay cooler when you go back into the heat. Call your local health department to see if there are any heat-relief shelters in your area.
- Electric fans may provide comfort, but when the temperature is in the high 90s, fans will not prevent heat-related illness. Taking a cool shower or bath or moving to an air-conditioned place is a much better way to cool off.

Protect your body:

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- Wear loose-fitting, lightweight, light-colored clothing. Light colors reflect away the sun's heat.
- Wear proper SPF sunscreen for your skin type.
- Protect your face and head by wearing a wide-brimmed hat.
- Wear sunglasses to protect your eyes from harmful UV rays.
- Know the symptoms of and how to respond to heat emergencies.

Preparing for Extreme Heat

Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Know if you are at a particularly high risk for a heat emergency and take appropriate precautionary measures.

In a normal year, approximately 175 Americans die when extreme heat pushes their body beyond its limits. Under normal conditions, the body's internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain a normal temperature.

Prepare your home:

- Install window air conditioners snugly, and insulate if necessary.
- Check air-conditioning ducts for proper insulation.
- Install temporary window reflectors (for use between windows and drapes), such as aluminum foil-covered cardboard, to reflect heat back outside.
- Weather-strip doors and sills to keep cool air in.
- Cover windows that receive morning or afternoon sun with drapes, shades, awnings or louvers (Outdoor awnings or louvers can reduce the heat that enters a home by up to 80%.).
- Keep storm windows up all year.

Prepare your community:

- Publish a special section with emergency information on extreme heat. Localize the information by including the phone numbers of local emergency services offices,the American Red Cross and hospitals.
- Interview local physicians about the dangers of sunburn, heat exhaustion, heat stroke and other possible conditions caused by excessive heat.

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- During a drought, run a week-long series suggesting ways that individuals can conserve water and energy in their homes and workplaces.
- Interview local officials and representatives of the U.S. Department of Agriculture about special steps farmers can take to establish alternative water supplies for their crops.
- Sponsor a "Helping Your Neighbors" program through your local school system to encourage children to think of those persons who require special assistance, such as elderly people, infants or people with disabilities, during severe weather conditions.

Working Safely in Extreme Heat

Pace yourself. If you are not accustomed to working or exercising in a hot environment, start slowly and pick up the pace gradually. If exertion in the heat makes your heart pound and leaves you gasping for breath, STOP all activity. Get into a cool area or at least in the shade and rest, especially if you become lightheaded, confused, weak or faint.

Employers should take the following steps to protect workers from heat stress:

- Schedule maintenance and repair jobs in hot areas for cooler months.
- Schedule hot jobs for the cooler part of the day.
- Acclimatize workers by exposing them for progressively longer periods to hot work environments.
- Reduce the physical demands of workers.
- Use relief workers or assign extra workers for physically demanding jobs.
- Provide cool water or liquids to workers.
- Avoid serving drinks with caffeine, alcohol or large amounts of sugar.
- Provide rest periods with water breaks.
- Provide cool areas for use during break periods.
- Monitor workers who are at risk of heat stress.
- Provide heat stress training that includes information about:
    - Worker risk
    - Treatment
    - Prevention
    - Symptoms
    -

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- Personal protective equipment
- The importance of monitoring yourself and coworkers for symptoms

Workers should avoid exposure to extreme heat, sun and high humidity when possible. When these exposures cannot be avoided, workers should take the following steps to prevent heat stress:

- Wear light-colored, loose-fitting, breathable clothing such as cotton.
- Avoid non-breathing synthetic clothing.
- Gradually build up to heavy work.
- Schedule heavy work during the coolest parts of the day.
- Take more breaks in extreme heat and humidity.
- Take breaks in the shade or a cool area when possible.
- Drink water frequently. Drink enough water that you never become thirsty.
- Avoid drinks with caffeine, alcohol and large amounts of sugar.
- Be aware that protective clothing or personal protective equipment may increase your risk of heat stress.
- Monitor your physical condition and that of your coworkers.

Heat Emergency First Aid

Extreme heat brings the possibility of heat-induced illnesses. In a normal year, approximately 175 Americans die from extreme heat. Extreme heat kills by pushing the human body beyond its limits. Under normal conditions, the body's internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain a normal temperature. You should know the factors that increase an individual's risk of experiencing a heat-related illness and monitor yourself and others for symptoms.

Sunburn:

- Symptoms: Skin redness and pain, possible swelling, blisters, fever, headaches.

Treatment:

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- Take a shower using soap to remove oils that may block pores, preventing the body from cooling naturally.
- Apply sterile dressings to any blisters, and get medical attention.
- Never put butter or other oils on a burn. They lock in heat and can make the burn worse.

Heat rash:

- Symptoms: Heat rash is a skin irritation caused by excessive sweating during hot, humid weather. It can occur at any age but is most common in young children. Heat rash looks like a red cluster of pimples or small blisters. It is more likely to occur on the neck and upper chest, in the groin, under the breasts and in elbow creases

Treatment:

- The best treatment for heat rash is to provide a cooler, less humid environment.
- Keep the affected area dry.
- Dusting powder may be used to increase comfort.

Heat cramps:

- Symptoms: Painful spasms, usually in leg and abdominal muscles; heavy sweating.

Treatment:

- Get the victim to a cooler location.
- Lightly stretch and gently massage affected muscles to relieve spasms.
- Give sips of up to a half glass of cool water every 15 minutes.
- Discontinue liquids if victim becomes nauseated.

Heat exhaustion:

- Symptoms: Heavy sweating but skin may be cool, pale or flushed. Weak pulse. Normal body temperature is possible, but will likely be elevated. Fainting or dizziness, nausea, vomiting, exhaustion and headaches are possible.

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Treatment:

- Move victim to an air-conditioned place or fan them if an immediate shelter is unavailable.
- Help the victim lie down.
- Loosen or remove clothing.
- Apply cool, wet cloths.
- Give sips of water if the victim is conscious.
- Be sure water is consumed slowly to avoid nausea.
- Give the victim time to fully rest and recover in a cool environment.
- If there is no improvement or if the victim is unable to drink fluids, take them to the emergency room or call 9-1-1 immediately as heat exhaustion can turn into heat stroke if not handled quickly.

Heat stroke: This is a severe medical emergency!

- Symptoms: High body temperature, hot, red, dry skin; rapid, weak pulse; and rapid shallow breathing. Victim will probably not sweat unless they were sweating from recent strenuous activity.

Treatment:

- Call 9-1-1 or emergency medical services or get the victim to a hospital immediately as any delay can be fatal.
- If help is not immediately available, the victim's body must be cooled quickly to prevent death.
- Move the victim to a cooler environment, if possible, and remove all clothing.
- Immerse the victim in a cool bath, or use wet sheets, ice bags, fans, air conditioners to reduce the body temperature.
- Place bags of ice next to the victim's major arteries in their neck, armpits and groin. The ice will cool the blood and the bloodstream will carry the cooled blood through the body.
- Watch for signs of breathing problems and be prepared to start rescue breathing and CPR if their pulse or breathing stops.

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Drought Time Water Conservation

All areas in the United States are at risk of drought at any time of the year. Droughts occur when a long period passes without substantial rainfall, and can affect vast territorial regions and large population numbers. Droughts also create environmental conditions that increase the risk of other hazards such as fire, flash flood and possible landslides and debris flow.

A prolonged drought can have a serious economic impact on a community. Increased demand for water and electricity may result in shortages of the resources. An emergency water shortage can be caused by prolonged drought, poor water supply management or contamination of a surface water supply source or aquifer. Moreover, food shortages may occur if agricultural production is stalled or impeded by a loss of crops or livestock.

The following tips were developed by a coalition of specialists on water conservation in Florida and are consistent with the recommendations developed through the National Disaster Education Coalition.

General:

- Never pour water down the drain when there may be another use for it. Use it to water your indoor plants or garden.
- Make sure your home is leak-free. One drop per second wastes 2,700 gallons of water per year! When you are certain that no water is being used in your home, take a reading of the water meter. Wait 30 minutes and then take a second reading. If the meter reading changes, you have a leak!
- Repair dripping faucets by replacing washers.

Bathroom:

- Check for toilet leaks by adding food coloring to the tank. If you have a leak, the color will appear in the bowl within 30 minutes (Flush immediately to avoid stains.).
- If the toilets handle frequently sticks in the flush position letting water run constantly, replace or adjust it.
- Leaky toilets usually can be fixed inexpensively by replacing the flapper.

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- Install a toilet displacement device to cut down on the amount of water needed for each flush (Contrary to popular opinion, a brick should not be used because it can dissolve and the loose pieces can cause damage to the internal parts. Instead, place a one-gallon plastic jug of water into the tank to displace toilet flow or purchase a device available at most hardware and home centers designed for this purpose.) Be sure installation does not interfere with the operating parts.
- Consider purchasing a low-volume toilet that uses less than half the water of older models. NOTE: In many areas, low-volume units are required by law.
- Take shorter showers.
- Replace your showerhead with an ultra-low-flow version.
- Place a bucket in the shower to catch excess water for watering plants.
- In the shower, turn the water on to get wet; turn off to lather up; then turn the water back on to rinse. Repeat when washing your hair.
- Don't let the water run while brushing your teeth, washing your face or shaving.
- Avoid flushing the toilet unnecessarily. Dispose of tissues, insects and other similar waste in the trash rather than the toilet.

Kitchen:

- Operate automatic dishwashers only when they are fully loaded. Use the "light wash" feature to use less water.
- When hand washing dishes, save water by filling two containers - one with soapy water and the other with rinse water containing a small amount of chlorine bleach.
- Most dishwashers can clean soiled dishes very well, so dishes do not have to be rinsed before washing. Just remove large particles of food and put the soiled dishes in the dishwasher.
- Store drinking water in the refrigerator. Don't let the tap run while you are waiting for water to cool.
- Do not use running water to thaw meat or other frozen foods. Defrost food overnight in the refrigerator or use the defrost setting on your microwave.
- Do not waste water waiting for it to get hot. Capture it for other uses such as plant watering or heat it on the stove or in a microwave.

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- Clean vegetables in a pan filled with water rather than running water from the tap. Re-use the water that vegetables are washed in for cleaning or watering plants.
- Kitchen sink disposals require lots of water to operate properly. Start a compost pile as an alternate method of disposing of food waste or simply dispose of food in the garbage.

Laundry:

- Operate automatic clothes washers only when they are fully loaded or set the water level for the size of your load.

Car washing:

- Use a shut-off nozzle on your hose that can be adjusted down to a fine spray, so that water flows only as needed. When finished, turn it off at the faucet instead of at the nozzle to avoid leaks. Check hose connectors to make sure plastic or rubber washers are in place to prevent leaks.
- Consider using a commercial carwash that recycles water. If you wash your own car, park on the grass so that you will be watering it at the same time.

Lawn care:

- Do not overwater your lawn. Lawns only need to be watered every five to seven days in the summer, and every 10 to 14 days in the winter. A heavy rain eliminates the need for watering for up to two weeks. Most of the year, lawns only need one inch of water per week. Buy a rain gauge so that you can better determine when to water.
- Water in several short sessions rather than one long one in order for your lawn to better absorb moisture. For example, water in ten-minute sessions spaced 30 minutes apart, rather than one straight 30-minute session.
- Water lawns during the designated hours.
- Position sprinklers so water lands on the lawn and shrubs and not on paved areas.
- Avoid sprinklers that spray a fine mist; most of the mist evaporates before it reaches the lawn. Check sprinkler systems and timing devices regularly to be sure they operate properly.

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- Raise the lawnmower blade to at least three inches, or to its highest level. A higher cut encourages grass roots to grow deeper, shades the root system and holds soil moisture.
- Avoid over fertilizing your lawn. Applying fertilizer increases the need for water. Apply fertilizers that contain slow-release, water-insoluble forms of nitrogen.
- Use a broom or blower instead of a hose to clean leaves and other debris from your driveway or sidewalk.
- Do not leave sprinklers or hoses unattended. A garden hose can pour out 600 gallons or more in only a few hours. Use a bell timer to remind yourself to turn sprinklers off.

Pool:

- If you have a swimming pool, consider installing a new water-saving pool filter. A single back flushing with a traditional filter uses 180 to 250 gallons of water.
- Cover pools and spas to reduce evaporation of water.

Long-term outdoor conservation:

- Plant native and/or drought-tolerant grasses, ground covers, shrubs and trees. Once established, they do not need water as frequently and usually will survive a dry period without watering. They also require less fertilizer and herbicides. Landscape with plants that are heat- and drought- tolerant and that do not require much water to live. Small plants require less water to become established. Group plants together based on similar water needs.
- Install irrigation devices that are the most water efficient for each use. Micro and drip irrigation and soaker hoses are examples of efficient devices.
- Use mulch to retain moisture in the soil (Help preserve native cypress forests by selecting other types of mulch such as treated melaleuca.). Mulch also helps control weeds that compete with landscape plants for water.
- Avoid purchasing recreational water toys that require a constant stream of water.
- Avoid installing ornamental water features (such as fountains) unless they use recycled water.

Within the community:

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- Participate in public water conservation meetings conducted by your local government, utility or water management district.
- Follow water conservation and water shortage rules. You are included in the restrictions even if your water comes from a private well.
- Encourage your employer to promote water conservation in the workplace.
- Patronize businesses that practice water conservation, such as only serving water on request.
- Report water losses (broken pipes, open hydrants, errant sprinklers, abandoned free-flowing wells, etc.) to the property owner, local authorities or your water management district.
- Encourage your school system and local government to help develop and promote a water conservation ethic.
- Support projects increasing the use of reclaimed wastewater for irrigation and other uses.
- Support efforts that create a concern for water conservation among tourists.
- Promote water conservation in community newsletters, on bulletin boards and by example. Encourage your friends, neighbors and co-workers to be "water smart."
- Conserve water because it is the right thing to do - even when someone else is footing the bill, such as when you are staying at a hotel.
- Try to do one thing each day that will result in saving water. Every drop counts!

Long-term water conservation:

- Retrofit all household faucets by installing aerators with flow restrictors.
- Consider installing an instant hot water heater on your sink.
- Insulate your water pipes to reduce heat loss and prevent them from breaking if you have a sudden and unexpected spell of freezing weather.
- If you are considering installing a new heat pump or air-conditioning system, the new air-to-air models are just as efficient as the water-to-air type and do not waste water.
- Install a water-softening system only when the minerals in the water would damage your pipes. Turn the softener off while on vacation.
- When purchasing a new appliance, choose one that is more energy and water efficient.
- If you have a well at home, check your pump periodically. If the pump turns on and off while water is not being used, you have a leak.

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Water restrictions:

- In some communities where drought conditions exist, officials may recommend measures to restrict use of water.
- These recommendations may include such procedures as watering lawns and washing cars on odd or even days of the week, at night or on weekends.
- The restrictions may limit hours or prohibit use of water or require use of hand watering instead of using sprinkler systems that use much more water.
- You should check with your local authorities or water utility for information on water restrictions that may be imposed for your area.

For more information, please contact your local water authority, utility district or your local emergency management agency for information specific to your area.